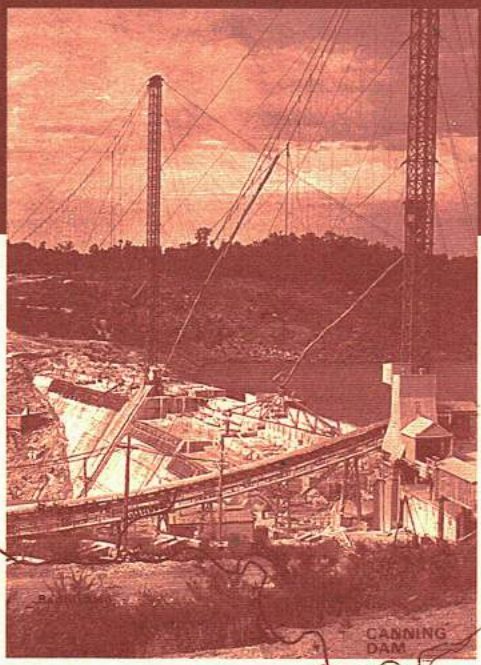
RGH.

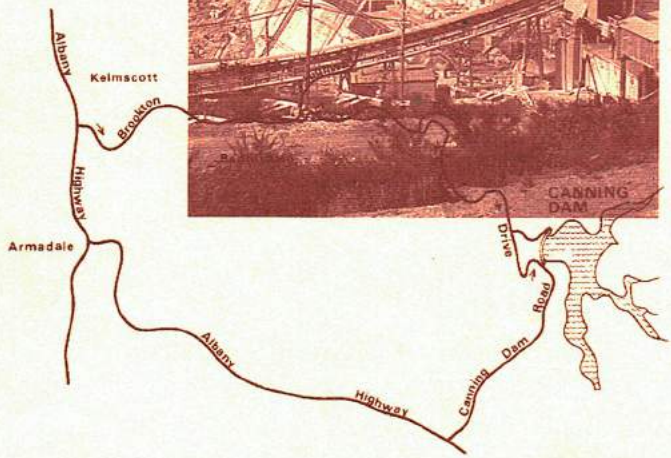
CANNING DAM

Historical
Engineering
Marker

Unveiling Ceremony

2 September 1998





Proudly presented by

The Water Corporation

and

The Institution of Engineers, Australia

Program

Welcome

Mr Bill Larke MIEAust, Engineering Heritage Committee

The Institution's Plaquing Program

The Hon Paul Omodei, Acting Minister for Water Resources

The History of Canning Dam

Unveiling and Presentation of the Historical Engineering Marker

His Excellency the Governor, Major General Michael Jeffery AC MC

Mr Bill Marmion FIEAust, Acting WA Division President

Presentation of the Plaque to Mr Don Young

Mr Don Young FIEAust, Board Member, The Water Corporation

Receives the Plaque on behalf of the Water Corporation

Classification by National Trust

Mr Tom Perrigo, Chief Executive Officer, National Trust of Australia (WA)

Presentation of Certificate proclaiming Canning Dam's classification by the National Trust of Australia (WA) to Mr Barry Sanders, General Manager, Bulkwater and Wastewater Division

Morning Tea

Guests are invited to view the exhibition of historical photographs in the old Resident Engineer's House and to walk along the top of the dam wall.

History of Canning Dam

DURING THE 1900s a rapid increase in the Metropolitan population and a new-found prosperity made it necessary to urgently supplement the water supply provided to Perth by the Victoria Dam on Munday's Brook. Fortunately, it was possible to do this rapidly by means of using artesian water as an expedient. However, the quality and smell of the water from this source, even when mixed with Victoria Dam water, compared unfavourably with the good quality water provided to the Goldfields through Mundaring Weir and the Goldfield's pipeline. Despite considerable disquiet, some three decades were to pass before this concern was remedied.

FOLLOWING SEVERE water shortages in Perth in the summer of 1922-23, and under considerable public pressure, the Premier, Sir James Mitchell, announced the 'Hills Scheme' prepared by the Engineer for Metropolitan Water Supply and Sewerage, F.W. Lawson. This provided for the long-term provision of metropolitan water supplies by two major dams on the Canning River and the Wungong Brook and a smaller one on Churchman's Brook. However, the time frame for the construction of these dams had yet to be determined. After further public debate a least expenditure solution was adopted and between 1921 and 1929 pipehead dams were provided on the three water courses and the main dam was built on Churchman's Brook. However, these new sources still did not allow for discontinuance of the use of artesian water and it was not until the Canning Dam was completed in 1940 that Perth was provided with a plentiful supply of good quality water. The dam was Perth's main water source for many years and it remains an essential element of the city's water supply. ■

Design and Construction of the Canning Dam

IN 1925, F.W.H. STILEMAN, the Engineer-in-Chief of the Public Works Department recommended that construction be started, without delay, on a concrete gravity dam for the Metropolitan Water Supply, Sewerage and Drainage Department. Mr Stileman recommended the present site on the Canning River, which had originally been recommended by C.Y. O'Connor's Water Supply Engineer, Thomas Hodgson, in 1897. However, due to lack of funds, work on the dam did not commence until 1931, when Western Australia was experiencing the full effects of the world-wide depression and the number of unemployed was increasing alarmingly. To provide employment, men receiving government sustenance were put to work on preparations for the dam, clearing the area to be submerged and preparing the foundations. In September 1933 work was authorised to proceed on construction of the dam itself. R.J. Dumas of the Public Works Department finalised a design report on the dam in 1931, but before construction commenced, he revised the design by raising the height of the dam by 7 metres in order to provide greater storage capacity. In 1934 Dumas was appointed Engineer for Metropolitan Water Supply and Sewerage and his department took over supervision of the dam's construction from the Public Works Department.

THE DAM TOOK seven years to complete, during which time hundreds of workers were employed on the project, most of whom had previously been unemployed and receiving sustenance from the government. Work was rationed to provide employment for as many as possible. Men worked for a number of weeks and were then stood down for a period. Working and stand down periods were varied depending on whether a worker was married

and the size of his family. All those working on the project lived in a village just below the dam which had all the facilities of a normal township, except a hotel. The Resident Engineer's house is the only complete building left from the construction village but the remnants of many other buildings can still be located. The Canning Dam is the only major work in Western Australia which was built during the Depression using sustenance labour where there is still clear evidence of how all those employed on the project lived and worked.

WHEN COMPLETED IN 1940, the Canning Dam was the second highest concrete gravity dam in Australia. In addition, its design was at the forefront of concrete gravity dam design of the period and both its design and construction incorporated a number of innovative features:

- Vertical drains to relieve water pressure within the structure which were connected to inspection galleries running the full length of the dam;
- Allowance for hydraulic uplift on the dam foundations;
- A foundation cut-off trench and a pipe and stone drain at the concrete-rock interface to minimise horizontal seepage;
- The bulk handling of cement and the weight batching of concrete materials;
- Water scabbling and sandblasting of horizontal construction joints and keyed vertical construction joints;
- Compaction of concrete by internal vibrators;
- Use of conveyors for aggregate movement from quarry to batching plant.

THE METHOD of concrete placement by means of towers and chutes previously used on the construction of the Wellington Dam, a smaller irrigation dam, was expanded for use on the larger dam and represents the most elaborate use of this method of concrete placement in Australia.

ONE OF THE unusual features of the Canning Dam is that when it was completed in 1940, due to the priorities of wartime, the site was never 'cleaned up' and the foundations of the temporary works are still visible on site and are a valuable means of interpreting the construction methods used. ■

Australian Historic Engineering Plaquing Program

THE PROGRAM was established as a means of bringing public attention to significant engineering works and the engineers who created them.

The objectives of the Program are to:

- identify and designate historic engineering works
- mark these works with a plaque
- increase public understanding and appreciation of the social and environmental elements of engineering works and their impact on the development of Australia
- encourage engineers to become aware of their own professional history and heritage
- promote the conservation of these works
- establish a documented archive of information about Australia's historic engineering works.

There are two types of plaques, both cast in bronze.

WORKS OF outstanding engineering importance receive the ultimate accolade of the National Engineering Landmark. Such works must have contributed significantly to the development of Australia. They may also be significant components of the National Estate. The Landmark plaque is a 300mm diameter disk, with the words 'National Engineering Landmark' around the edge. In addition, there may be a 400mm x 300mm Information Plaque recording the significance of the object.

FOR ITEMS of lesser significance, or those which are important only from a regional point of view, the Historic Engineering Marker is awarded. This is similar to the Information Plaque except that it has the words 'Historic Engineering Marker' across the top. ■

Technical Description

Dam Type - Concrete Gravity Dam

Height - 70 metres above lowest foundation level

Length - 466 metres

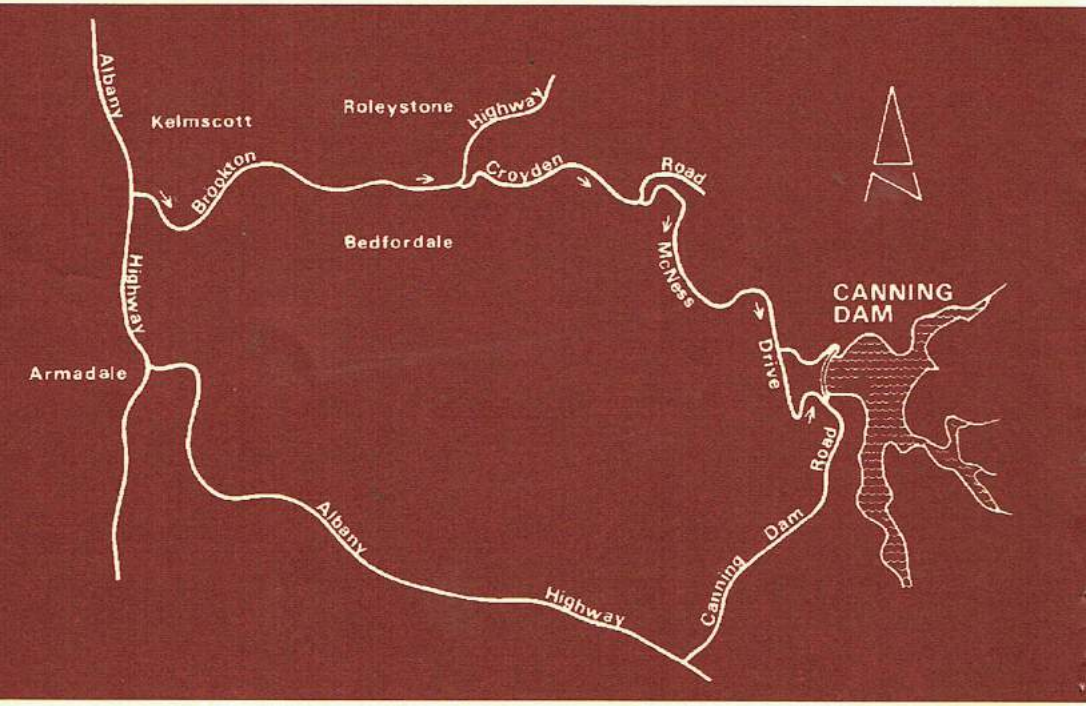
Volume of Concrete - 272,000 cubic metres

Spillway Type - 12 bays of uncontrolled overflow crest

Spillway Capacity - 900 cubic metres per second (at maximum water level)

Reservoir Volume - 90,500 mega litres

Reservoir Area - 501 hectares (at full supply level)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